

WHAT IS CLAIMED IS:

1. An illumination system for illuminating a surface by use of light from a light source, said illumination system comprising:

an emission angle conserving optical unit effective to emit the light from the light source at a constant divergent angle; and

a diffractive optical element for producing a desired light intensity distribution on a predetermined plane;

wherein said diffractive optical element is disposed at or adjacent a position where light from said emission angle conserving optical unit is collected.

2. An illumination system according to Claim 1, further comprising a multiple-beam producing element, and a light projecting element for superposing light beams from said multiple-beam producing element one upon another on the surface to be illuminated, wherein the predetermined plane corresponds to a light entrance surface of said multiple-beam producing element.

3. An illumination system according to Claim 2, further comprising a zoom optical system for projecting the light intensity distribution, produced

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Имя	Фамилия	Год рождения	Место рождения	Образование	Служба
Александров	Сергей Иванович	1908	Москва	Высшее	Инженер
Васильев	Пётр Петрович	1915	Ленинград	Среднее	Работник
Давыдов	Николай Степанович	1920	Новосибирск	Среднее	Учитель
Зинченко	Евгений Александрович	1925	Харьков	Среднее	Строитель
Козлов	Антон Павлович	1930	Одесса	Среднее	Техник
Кузнецов	Владимир Григорьевич	1935	Воронеж	Среднее	Работник
Лебедев	Константин Фёдорович	1940	Брянск	Среднее	Учитель
Михайлов	Юрий Викторович	1945	Ярославль	Среднее	Строитель
Петров	Алексей Николаевич	1950	Рязань	Среднее	Работник
Романов	Георгий Семёнович	1955	Тула	Среднее	Учитель
Сидоров	Виктор Михайлович	1960	Магнитогорск	Среднее	Строитель
Тимофеев	Аркадий Львович	1965	Челябинск	Среднее	Работник
Федотов	Кирилл Юрьевич	1970	Самара	Среднее	Учитель
Хохлов	Максим Игоревич	1975	Пермь	Среднее	Строитель
Цуккерман	Эдуард Яковлевич	1980	Волгоград	Среднее	Работник
Шварц	Израиль Моисеевич	1985	Барнаул	Среднее	Учитель
Щербина	Алла Владимировна	1990	Иркутск	Среднее	Строитель
Юдин	Виталий Сергеевич	1995	Кемерово	Среднее	Работник
Якушев	Андрей Валентинович	2000	Новгород	Среднее	Учитель

distribution on the predetermined plane.

7. An illumination system according to Claim 1,
wherein said diffractive optical element is a phase
5 type or amplitude type computer hologram.

8. An illumination system according to Claim 1,
wherein said emission angle conserving optical unit
comprises a fly's eye lens having small lenses arrayed
10 tow-dimensionally.

9. An illumination system according to Claim 1,
wherein said emission angle conserving optical unit
comprises an aperture and a lens system.
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10. An exposure apparatus, comprising:
an illumination optical system for
illuminating a mask surface, as a surface to be
illuminated, with use of light from a light source,
20 said illumination optical system including (i) an
emission angle conserving optical unit effective to
emit the light from the light source at a constant
divergent angle, and (ii) a diffractive optical
element for producing a desired light intensity
25 distribution on a predetermined plane, wherein said
diffractive optical element is disposed at or adjacent
a position where light from said emission angle

conserving optical unit is collected; and

a projection optical system for projecting a pattern formed on the mask surface, as illuminated with the light from said illumination optical system, onto a wafer.

11. A device manufacturing method, comprising the steps of:

applying a photosensitive material to a wafer;

illuminating a mask surface, as a surface to be illuminated, with use of light from an illumination optical system, wherein the illumination optical system includes (i) an emission angle conserving optical unit effective to emit the light from the light source at a constant divergent angle, and (ii) a diffractive optical element for producing a desired light intensity distribution on a predetermined plane, wherein the diffractive optical element is disposed at or adjacent a position where light from the emission angle conserving optical unit is collected;

projecting, through a projection optical system, a pattern formed on the mask surface onto a wafer; and

developing the transferred pattern.